

PSS Weights, Variance, and Missing Data

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Module Objectives

- Describe the PSS [weights that must be applied](#) to assure data are representative of the target population
- Describe the procedures for [calculating appropriate standard errors](#)
- Describe the missing data codes used in PSS and how to handle missing data to ensure accurate analysis

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Universe Design Procedures in PSS

- The universe list of Private School Surveys include schools that
 - Are not supported primarily by public funds
 - Provide classroom instruction for one or more of grades kindergarten through 12th or comparable ungraded levels, and
 - Have one or more teachers
- [Dual frame approach](#) to build private school universe in 2011-12
 - List frame
 - 2009-10 PSS universe list matched to state departments of education and associations
 - Area frame
 - Geographic areas selected through stratified cluster sampling searched for private schools



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PSS Weighting and Final Weight

A weight should be used in analyses of PSS data in order to make estimates produced from the sample representative of the target population

- PSS final weight variable (PFNLWGT)
- Final weight assigned to each school respondent accounts for:
 - unequal probabilities of selection of geographic areas sampled for the area frame of schools
 - nonresponse
- Final weight = Base Weight X Nonresponse Adjustment Factor
 - Base Weight is inverse probability of selection of school
 - For list-frame schools, Base Weight =1
 - For area-frame schools, Base Weight is inverse probability of selecting geographic area in which school is located
 - [Nonresponse Adjustment Factor](#) is weighted ratio of total eligible in-scope schools to total responding in-scope schools within cells
 - List-frame school cells defined by affiliation, locale type, grade level, Census region, and enrollment
 - Area-frame school cells defined by three-level typology and grade level

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PSS Weighting and Final Weight (Continued)

- Weights matter in PSS because without the use of the final weight, any statistical software package assumes a simple random sample (SRS), with an equal probability of selection for each respondent.
- As PSS does not use an equal probability of selection, the final weight value varies from one respondent record to another
- Unweighted data do not take into account the unequal probabilities of selection used in PSS

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Standard Error Calculation in PSS – Replication Techniques

- This method calculates appropriate standard errors based on differences between estimates from the full sample and a series of created subsamples (replicates)
- Select replicate weights that are associated with your final weight (REPW1-REPW88)
- PSS replication weights were produced using a Balanced Repeated Replication (BRR) method
- This is the only accurate method for calculating standard errors in PSS, as no PSU or strata variables are provided in the data files

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Examples of Standard Error Calculation

- Resource documents are provided in the Common Module '[Statistical Analysis of NCES Datasets Employing a Complex Sample Design](#)'
- Examples of [SAS code](#)
 - Categorical estimates (Yes/No, Likert scales, discrete categories) require PROC CROSSTABS
 - Continuous data estimates require PROC DESCRIPT
 - Percentage estimates require PROC RATIO
 - **NOTE:** Using this code for your own research will necessitate substituting your variables of interest

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Missing Data

- Since 1991-92 PSS, all items that are missing data after the editing process are imputed
- Two [imputation methods](#) used
 - Donor imputation using hot-deck methodology
 - Manual imputation using information from data record, sample file record and questionnaire
- All imputed variables have corresponding imputation flags on the data file
 - F_variable name (e.g., F_P135)
 - Imputation flag values
 - 0 = Value not imputed
 - 4 = Imputed by using donor value
 - 5 = Imputed manually
 - Users can use imputation flags to
 - Delete imputed value
 - Use alternative imputation procedures
 - Account for imputation in computing reliability of estimates

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Module Summary and Resources

Summary

- Described the PSS [weight that must be applied](#) to assure data are representative of the target population
- Described the procedures for [calculating appropriate standard errors](#)
 - Described the missing data codes used in PSS and how to handle missing data to ensure accurate analysis

Resources

- [Analyzing NCES Complex Survey Data](#)
- [Statistical Analysis of NCES Datasets Employing a Complex Sample Design](#)
- [Dual frame approach](#)
- [SAS Code Resource Document](#)
- [Imputation methods and nonresponse adjustment factor](#)